



## SUPPLY CHAIN MANAGEMENT COMPETITIVE ADVANTAGE IN SMALL AND MEDIUM ENTERPRISES –A STUDY OF SELECT DISTRICTS IN TELANGANA STATE

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### **Abstract**

*The supply chain management practices in the current day scenario have become an essential factor to be considered when the companies survival in the competitive world. The aim of the study is to find out the factors which affect the competitive environment and lead to competitive advantage of the SMEs. A sample of 138 entrepreneurs from SMEs is chosen from the manufacturing sector from the three districts of Telangana: Hyderabad, Medak and Ranga Reddy. The factors that are identified from the study are price of the product, product customisation, time factor (like execution of customer orders, delivery on time, etc), quality of the product, introducing the new products in the market, etc.*

**Key Words:** *Supply Chain Management, Competitive Advantage, Factor Analysis, Small And Medium Enterprises.*

### **Introduction**

SMEs play a key role in the industrialization of a developing country like India. Moreover SMEs need low investment, ensure a more equitable distribution of national income and facilitate effective mobilization of resources of capital and skill. It is proven fact that SMEs drive the economy and contributes income and value added accounting for up to 90 percent of the manufacturing enterprise and between 40 to 80 percent of manufacturing employment, adds 40 per cent to the industrial output to the country, and are the largest source of employment after agriculture. The logic of private sector, especially under globalization, demands the achievement of competitiveness at the local, national and international levels where competitiveness can be achieved only through a continuous process of innovation. SME firms should enhance their competitiveness by adopting newer technologies, through better design features, customer-oriented service, quality distribution and logistics management to set a global quality bench-marking. Their survival depends on responding to the changes taking place around them, and timely response to competition which will assure a long way survival. The small and medium enterprises (SME's) constitute an important segment of the Indian economy in terms of their contribution to the country's industrial production, exports, employment and creation of an entrepreneurial base.

### **Objective of the Study**

It is to find out the variables which are similar in properties and which guide or help to use the competitive advantage to overcome the competition and to sustain in the market.

### **Review of Literature**

Simpson et. al.(2004) argue that the SMEs can gain a competitive advantage and create sustainable business by adopting environmental good practices. However, the perceptions of SMEs and their approach to environmental improvements suggest that there are some fundamental misunderstandings and difficulties in achieving these in actual practice. The authors aim to assess the ability of SMEs to create a competitive advantage by adopting environmental good practice and making environmental improvements to their businesses. The meeting of these requirements was seen as a cost that was not transferable to customers, in terms of added benefits and very few organisations could show that it led to a competitive advantage.

Buffa (2006) concludes that the US position is eroding with wage cost changes taken into consideration. The competitive quality of American products is not being maintained. There are many cases which indicate the declining of American manufacturing competitiveness- particularly in comparison to that of the Japanese.

Chukka Kondaiah & GUK. Rao(2007) opine the Indian micro, small, and medium enterprises constitute an important segment of the country's economy. They argue that the process of economic liberalisation and market reforms has chances in many ways to enter in to larger, stronger and deeper markets of SMEs with global markets. They conclude that the sustainable growth of SMEs depends on formulating the right policies and taking the right initiatives that are need- based and making their presence felt in the global value chains, which implies that the SMEs should continue to strengthen their competitive character by creating opportunities afresh for sustained growth in the changing business environment.

Prasad (2007) reveals that one would rarely find a two wheeler or an electrical and electronics products repair / service centre and even tailoring shop closer to consumers in the local market and residential areas in metros. Instead, what finds, today, are

either company/ dealer owned service facilities, or company authorised service centres. The author feels that the ever expanding ready-to-wear apparel market had its adverse impact on tailoring services and the flashy showroom- cum-service outfits, often owned by large players in metros, cities and towns, are increasingly easing out small one-man service enterprises in such activities.

Chang et. al.(2008) has utilised conceptual model to evaluate the performance and competitive advantage associated with ERP from a supply chain management perspective. The resulting model can be used to assist an enterprise in evaluating the potential partnerships. The models were based on the strategic thrust theory and used the back propagation network as an evaluation tool, which also plays an important role in establishing a firm's competitive advantage.

Subhan Q.A. et. al. (2013) have admitted the fact that encouraging entrepreneurship is a key to improve competitiveness, boost the trade volume, fostering economic activities and generating the employment opportunities. By taking the economic and social variables into study it is observed that the results are in favour of the positive correlation between the process innovation and SMEs growth and hence SMEs growth rate has positive linkage with economic development.

Shiraz and Ramezani (2014) have defined the competitive advantage as the level to which a firm can take its chance to defend itself from its competitors which include the price or cost, delivery time, quality of the product, flexibility in altering the demands of the customers and to compete with the competitors in producing the product with in the stipulated time given by the customers. The companies having the competitive advantages are successful and those which lack the competitive advantages are unsuccessful.

Stratopoulos (2016) focuses on the studies pertaining to check the competitive advantage duration due to the adoption of the new emerging technologies. The analysis is done with the assumptions that the thought that the adoption rate of the new technologies and the duration it requires to adopt the previous technologies by the average firm which have the potential to adopt it where it is yet the minimal source of competitive advantage which is required for the information technology researchers who study its business value of the adoption.

**Operational definition:** Supply chain competitive advantage in this study is operationalised as to customize the product characteristics to introduce & compete in the market.

### Methodology

A study is to evaluate the usage of supply chain management (SCM) practices in the small and medium enterprises (SMEs) in the districts of Hyderabad, Medak and Ranga Reddy. The main objective of our study is to find out the competitive advantage of the SCM in SMEs in the three districts. A questionnaire is designed using Likert Scale 1-5 the responses are collected from the different places in the districts of Hyderabad, Medak and Ranga Reddy.

The Factor Analysis method is used to identify the sample size and factors which explain the correlation between the set of observed factors.

### Data Analysis

It is to identify the suitability of the present data for running the factor analysis for which we have to run the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy and Bartlett's test of sphericity. For the present data the KMO value is 0.784 and hence the factor analysis is appropriate for the study.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.784	
Bartlett's Test of Sphericity	Approx. Chi-Square	442.036
	Df	66
	Sig.	0

The Bartlett's test assumes that the null hypothesis of the original correlation matrix is an identical matrix. For the factor analysis to work, there should be some relationship between the variables and if R-Matrix is an identical matrix, then all the correlation co-efficient would be zero. Hence this value should be significant, i.e., value less than 0.05. The significance explains us that the R-matrix is not an identity matrix and hence there is some relation between the variables. For the current data the Bartlett's test is highly significant as  $p < 0.001$ , and hence the factor analysis is appropriate.

### Communalities

The communalities are the values where the components with the initial values of 1 are given the extracted values where the Principal Component analysis is used. The table 2 displays the components with the initial and the extracted values. The abbreviation SCCOMA in the table stands for Supply Chain Competitive Advantage.

	Initial	Extraction
Offer competitive prices (SCCOMA1)	1	0.588
Provide customised products (SCCOMA3)	1	0.672
Alter prod offerings to meet clients needs (SCCOMA4)	1	0.765
Response is well based on the customer demands (SCCOMA5)	1	0.618
Deliver the kind of products needed (SCCOMA6)	1	0.504
Delivery of customer order on time (SCCOMA7)	1	0.442
Provide dependable delivery (SCCOMA8)	1	0.605
Variable to compare based on quality (SCCOMA9)	1	0.518
Offer products which are highly reliable (SCCOMA10)	1	0.57
Offer products which are highly durable (SCCOMA11)	1	0.487
Deliver the product to the market quickly (SCCOMA13)	1	0.617
First in the market to introduce new products (SCCOMA14)	1	0.703

Extraction Method: Principal Component Analysis.

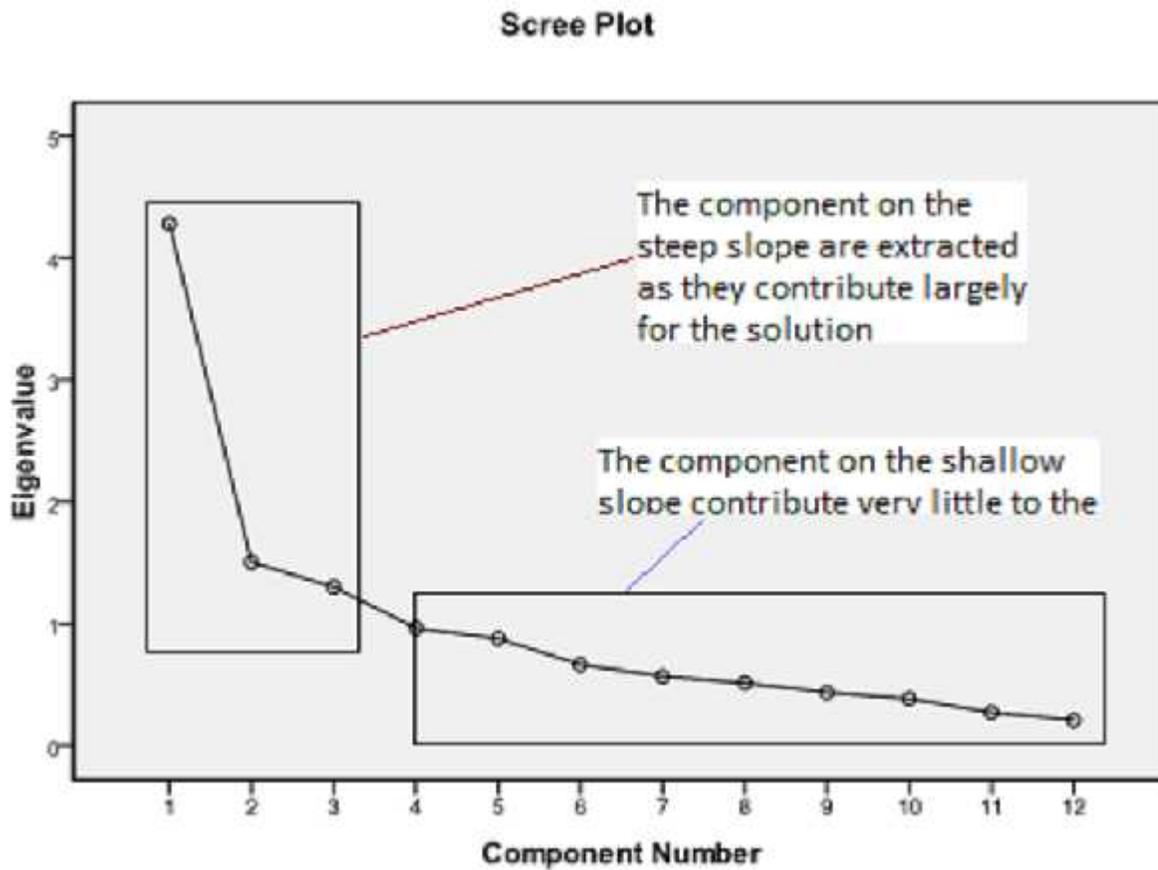
The communalities give us the components which are required for the analysis and the extraction method is used. The number of components is reduced depending upon their usage and their importance.

### Analysis of Variance

The table 3 lists Eigen values associated with each linear factor or component before extraction, after extraction and after rotation. Before extraction 15 linear components are displayed and there are many components as variables and in a correlation analysis, the sum of the Eigen values equals the number of components. After giving the command extract the Eigen values that are greater than 1, the first three principle components are extracted. It can be observed that the tables also display the Eigen values in terms of percentage of variance explained by each factor (factor 1 explains 35.677 of total variance). The Eigen values associated with these three factors are again displayed in the columns labeled "Extraction or initial sum of Squared Loadings". The extracted values in this table are similar to the value before extraction except the values for discarded factors are ignored. After the rerun the model loading factor, only three factors are displayed in the Rotation sum of the squared loadings where the Eigen values of the factors after rotation are displayed and have values greater than 1 and all others where the Eigen values less than 1 are ignored. The rotation has the effect of optimizing the factor structure and the relative importance of the three factors is equalized. Before rotation, factor 1 accounted for considerably more variance than the remaining two (35.677% compared to 12.547, 10.853). However after extraction it accounts for only 25.492 of variance compared to 21.585 and 12.000 respectively.

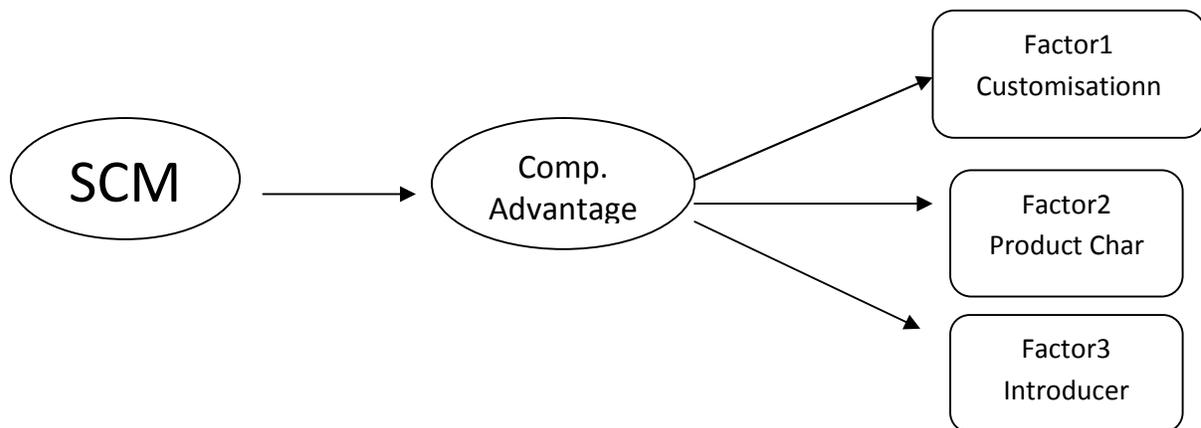
Component	Initial Eigen values			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.28	35.677	35.677	3.06	25.492	25.492
2	1.51	12.547	48.224	2.59	21.585	47.077
3	1.3	10.853	59.077	1.44	12	59.077
4	0.97	8.042	67.119			
5	0.88	7.343	74.462			
6	0.67	5.566	80.028			
7	0.57	4.747	84.775			
8	0.52	4.302	89.077			
9	0.44	3.662	92.74			
10	0.39	3.217	95.956			
11	0.27	2.278	98.234			
12	0.21	1.766	100			

The other way to extract the factors from the sample size is Scree plot as shown in figure.  
**Figure no: 1**



From the above Scree plot it can be observed that the components in the vertical rectangle represents the one where the slope is very high and which contribute largely to the solution. Similarly the components in the horizontal rectangle with low slope indicate that they don't contribute or contribute very little to the solution.

**Fig no:2 Pictorial representation of the Supply Chain Management Competitive Advantage**



	Component			Dimension	Reliability
	1	2	3		
alter prod offerings to meet clients needs SCCOMA4	0.873			<b>Factor 1</b> Customisa tion	0.665
response is well based on the customer demands SCCOMA5	0.773				
provide customised products SCCOMA3	0.743				
delivery of customer order on time SCCOMA7	0.654				
offer products which are highly reliable SCCOMA10		0.752		<b>Factor 2</b> Product Characteris tics	0.686
deliver the kind of products needed SCCOMA6		0.651			
offer products which are highly durable SCCOMA11		0.648			
provide dependable delivery SCCOMA8		0.613			
offer competitive prices SCCOMA1		0.595			
variable to compare based on quality SCCOMA9		0.543		<b>Factor 3</b> Introducer	0.613
first in the market to introduce new products SCCOMA14			0.837		
deliver the product to the market quickly SCCOMA13			0.782		

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations

Similar to the previous analysis the rotated component matrix is extracted using the Principal Component Analysis as the extraction method and the Varimax with the Kaiser Normalisation rotation method and the rotation convergence takes place in 5 iterations. The output in this case also has the positive output and finding out the different statements which give the similar components.

The components are split into different categories as per their values and their importance and priority. Then these are classified by taking their characteristics and properties.

The categories that are split into three Factors and they are

Factor1: Customisation

Factor2: Product Characteristics and

Factor3: Introducer.

#### Factor1: Customisation

- The manufacturers should look into the alterations which the customers need in order to satisfy the customers or clients.
- The response should be well in such a way that the customers demand for the new features should be fulfilled.
- The products should be so customised that the customer will get all the features which they have thought of. By doing so the chance of losing the customers will be minimised.
- The customers will be very satisfied when the products they have ordered for will be delivered to them on time.

#### Factor2: Product Characteristics

- The customers will be looking for the products on which they can rely on.
- The customers should be supplied with the products which they need.
- The customers will be looking for the products which are highly durable and lasts for a longer period.
- The customers should be provided with the dependable delivery



- The products should be offered at the competitive prices so that the customers should not shift to the competitor for lower prices.
- The products should be in a position where they can vary with the competitor depending on the quality.

### Factor3: Introducer

- The company should be first in the market in introducing the new products.
- The company should deliver the products in the market quickly so that they can take the advantage of absorbing the majority of the market.

### Future Research

- In this study the focus is done pertaining to the metallic industry. So there are other industries like plastic industry, textile industry, food industry, paint industry etc.
- In this study the three districts of Telangana are only covered, so further research can be done taking the other districts or the state as a whole.
- The study can be further carried out by taking some other factors which are not covered in this study.

### Conclusion

From the above study where the different variables pertaining to the metallic industries are grouped depending upon their similarity in characteristics and properties and it is easy to find the solutions to overcome the competition and to take the steps to use the competitive advantage to face the competitors and to sustain in the market.

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